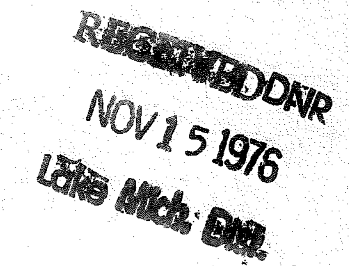


PRELIMINARY

ENGINEERING

PLAN

LEHRER

LANDFILL

SITE

KAUKAUNA, WIS.

PREPARED BY
HARRIS AND ASSOCIATES, INC.
2718 N. MEADE ST.
APPLETON, WIS.

NOVEMBER 12, 1976

INTRODUCTION

GENERAL

In accordance with the Department of Natural Resources, State of Wisconsin, modified order No. 2A-75-1045A and the letter from the Solid Waste Management Section of Department of Natural Resources dated April 21, 1976 regarding the Lehrer Landfill, the preliminary engineering plan has been prepared and is included herewith. The hydrogeological report for the Lehrer Landfill, DNR License No. 73, has been prepared and submitted by Soil Testing Services of Wisconsin, Inc.

LOCATION OF SITE

The Lehrer Landfill site is located in Section 21 and Section 22, Township 21 North, Range 18 East, Town of Buchanan, Outagamie County, Wisconsin, adjacent to and immediately South of the city limits of Kaukauna and East of State Trunk Highway 55.

The immediate area included in the Lehrer Landfill site consists of approximately 40 acres of which the easterly 20 acres has already been filled and final cover placed. The current landfill and future landfill proposed herein will occupy the westerly 20 acres. The present active landfill operation is located in the northerly seven acres of the westerly 20 acres and consists of an excavated pit with a

bottom elevation of approximately 700. The pit is filled with refuse and clay cover to about the original grade of the land. The landfill site is located 1000 feet easterly of State Trunk Highway 55.

Elevations referred to herein and on the accompanying drawings refer to the City of Kaukauna datum. The horizontal control has been established within the Lehrer property and is shown on drawing numbered DE-1074.

AREA SERVED

The areas contributing waste to the Lehrer Landfill has changed considerably during 1976. The change was caused by the introduction of two governmental agencies, Outagamie County and Winnebago County, into the landfill business. Prior to the two county landfills, several metropolitan communities located in those two counties were utilizing the Lehrer Landfill site for disposal of their solid wastes. The areas served and the private contributors to the Lehrer Landfill are tabulated in Table I of this report.

These contributors, quantities of waste and type of wastes are expected to vary in the future depending upon the rate schedules and policies of the municipal landfills. Outagamie County is accepting all shreddable solid wastes from within county sources at no direct cost to the contributors. This amounts to approximately 75 to 80 percent of the total waste generated in the county. The balance of the waste which is non-shreddable is hauled directly to the

county landfill site with a charge per ton of waste. The county charge per ton is either competitive or slightly more than charged by the Lehrer Landfill site. Due to these competitive charges, the privately owned landfill is acquiring some Outagamie County non-shreddable wastes. However, if Outagamie County decides to accept non-shreddables at no cost, the solid wastes to this privately owned Landfill will decrease considerably.

The populations of the municipal areas currently using the landfill is as follows:

Town of Harrison, Calumet County ---------- 1500

Town of Woodville, Calumet County --------- 1400

Town of Buchanan, Calumet County ---------- 2100

City of Kaukauna, Outagamie County -------- 5100
(non-shreddables only)

MATERIAL TO BE DISPOSED

The type of solid wastes which are currently being disposed of in the Lehrer Landfill site, as shown in Table I consists of 31.7 tons per day of domestic and non-shreddable wastes, 1.6 tons per day of hospital wastes, 4.2 tons per day of building demolition wastes, an average of 207.5 tons per day of paper mill sludge between 18 percent and 23 percent solids, 69.5 tons per day paper mill wastes consisting primarily of paper and paper rolls and an average of 90 cubic yards of pulp wood bark.

As noted above under "Area to be Served" the sources of solid wastes and the type and quantities of solid wastes could very likely vary in the near future depending upon the fee schedule and policy established by Outagamie and Winnebago Counties' landfill.

SOLID WASTE QUANTITIES

The quantities of various types of solid wastes which will contribute to the Lehrer Landfill are based on past experiences and information furnished by public agencies and private firms involved in the collection and disposal of wastes. Some of the factors involved which make the quantities approximations are (1) lack of accurate quantity records at both the point of collection and disposal, (2) quantities and type of solid wastes vary from day to day and (3) the advent of municipalities' involvement in solid waste landfill operations.

Since most solid wastes will vary in density and compressibility, quantities are generally referred to by weight and expressed in tons, which is the most meaningful measure for such material.

ENGINEERING DESIGN

The Lehrer Landfill site consisting of the westerly 20 acres has been divided into nine approximately equal cells. The cells are grouped in 3 tiers of 3 cells per tier numbered from 1 through 9. Cells 1 and 2 have been completely filled

and some of the final cover has been placed. Cell 3 is the current active cell and is approximately 30 percent filled.

Based on past and current excavations and the results of the soil borings taken throughout the site, all the excavated material should mainly be clay and acceptable to be used as cover material. The clay material will be used for the following purposes.

1. To be either stockpiled or used immediately for intermediate or daily cover material.
2. To be used for the construction of all required berms, both within the cells and around the exterior of the cells.
3. To be stockpiled for use as final cover over the completed cells.
4. To be stockpiled as excess material for future use.

Cell 4 is presently being excavated with the clay being used for daily cover and final cover for cells 1, 2 and 3. Cell 4 will be excavated to the grades shown on the drawings. Those grades have been established to facilitate proper operation within the cell and to permit good drainage and collection of both leachate and surface runoff. The walls of the cell will be sloped approximately one horizontal to two vertical to permit maximum capacity and maximum safety. The surplus excavated clay from cell 4 will be stockpiled east and north of cell 4 in close proximity to minimize the length of haul and handling of the clay. At the present

rate of excavation and placement of the clay from cell 4, the quantity of material that will be stockpiled may be insufficient to complete the daily and final cover for cell 4. Therefore, the excavation of cell 5 must commence before cell 4 becomes active in order to furnish cover and berm material for cell 4. The surplus berm clay will also be used for final cover after the berm is no longer required and the final grades attained.

Complete excavation and preparation of cell 4 must be completed prior to the placement of any refuse in that cell. This includes trenching for the perforated pipe and the installation of the leachate collection system.

Berms three to four feet high will be constructed around the perimeter of the site to minimize accumulation of surface water within the cells. The berms will direct the water around the site to natural water courses. Temporary berms will be constructed within the operating cells to accumulate and separate clear surface water from any leachate which might form during the day to day operation. The leachate will be collected near the base of the refuse and will be pumped into the compacted lift of solid waste. Each cell will be constructed so that the bottom will have a minimum of one percent slope towards one unfilled corner of the operating cell to facilitate drainage within the cell. Necessary observation wells will be installed through the waste to the low point of each cell to note any formation of leachate in the filled cells.

LEACHATE AND GAS VENTING CONTROL

Because the bottom of the landfill area will be located lower than the ground-water table at the Lehrer site, a leachate collection system should be provided consisting of trenches backfilled with gravel as an envelop around a perforated PVC sewer pipe. The collection trench located on two sides of the cell at the lower elevations would extend to a sump located in the lowest corner of cells no. 4 and no.5 Cells 6, 8, and 9 can be connected to the sump of cell no.5 and cell 7 can be connected to the sump in cell no.4. A riser pipe or a standard manhole would extend to the surface from each of the sumps and be used to monitor leachate levels within the sump. The manhole or riser would also be used to remove liquid accumulation with a pump. If excessive accumulations of leachate form in sumps, the leachate would be recycled back into the active landfill area by pumping: another consideration for the disposal of the excess leachate could be recycling through a local sewage treatment plant. Due to the impermeable cover material that will be used for the intermediate and final cover, the methane and other gases that will be generated could not escape through the cover material. Therefore, gas vents will be necessary to permit the gases to escape into the atmosphere. These gases are generated during refuse decomposition in a sanitary landfill. Vents should be located at the high point in each cell to release any accumulation of methane gas. Precautions should be undertaken to prevent methane gas from accumulating in low areas because of its explosive character.

LANDFILL COVER

Initially the intermediate cover of the refuse should be provided on a daily basis. After observation of the daily cover and with DNR approval, the intermediate cover could be possibly extended longer than the daily requirement. If no problems occur with the longer interval, a further extension of intermediate cover frequency could be considered. Once the cover frequency has been established, it is recommended that the refuse be covered whenever one half acre has been filled to final grade. The final cover, consisting of three feet of clay compacted in layers not to exceed nine inches and one foot of topsoil, should be placed over the refuse. The final topography of the cell is shown on the plans.

The existing clay screen separating the landfill site from the residential area to the north will be maintained during operation of the landfill site. The screen will serve as a visual, noise and litter control. Additional litter control will be provided for by the installation of permanent or temporary fences as required.

EQUIPMENT

The Lehrer Landfill has ample equipment to construct and operate the landfill including a trash compactor, track type dozers, loaders, graders and dump trucks. The track type dozer will be used to excavate and move the clay to the desired areas where a short distance is involved. Where longer hauls are required, the scraper or the front end loader and dump truck will be utilized to transport the clay to the area required. The grader will be used to assist in preparing the bottom of the new cells to the grades shown on the drawings. The grader is also used for final grading of the cover material, berms, roads and wherever required.

Pumping equipment will be available for pumping accumulated water from the active cell. Other miscellaneous small equipment and tools are available to perform any and all necessary work connected with the operation.

All safety guards and safety equipment will be installed on all pieces of equipment and all safety rules observed in order to maintain maximum safety at all times. All requirements of the various State Codes and O.SH.A. will be informed.

ROADS

The access roads shown on the drawings should be so constructed that they will be serviceable under all weather conditions. In order to provide such a road all topsoil and other undesirable soils should be removed and the roadbed filled with acceptable compacted material and finished with at least 12 inches of compacted crushed stone with a sufficient crown to insure runoff of water. Since truck access to the disposal areas is required under all weather conditions, adequate roads, turn-arounds and a proper ramp will be provided for operations of all equipment and collection vehicles.

FINAL USE

Due to the excessive settling of a completed sanitary landfill, the final use of the land is restricted to recreational, agricultural or some other use that will not be affected by the varying degrees of settlement.

Upon completion of filling all cells with refuse, placing the final compacted cover of 3 feet and 1 foot of topsoil, it is proposed to revert the entire area back to agricultural purposes. The final grades of the site are as shown on drawing DE-1079. Two areas of the final grades will concentrate the runoff to adjacent ditches. One area will direct the runoff water to the south and into a ditch along County Trunk Highway "CE" and the other drainage ditch will

direct the water easterly to an existing culvert under the abandoned railroad tracks and into Kankapot Creek. Each of the two drainage areas will be sodded with natural grasses immediately upon completion of the grading. The sod should extend on either side of the drainage area to a point where erosion will no longer be a problem or a minimum of 20 feet on either side.

TABLE I

SOLID WASTE QUANTITIES FOR LAND DISPOSAL
AT LEHRER LANDFILL
TOWN OF HARRISON, OUTAGAMIE COUNTY

SOURCE MUNICIPALITIES:	TYPE OF WASTE	ESTIMATED QUANTITY OF WASTE		
Town of Harrison	Domestic	0.5 ton/day		
Town of Woodville	Domestic	0.5 ton/day		
Town of Buchanan	Domestic	0.7 ton/day		
City of Kaukauna	Non-Shreddable - Incl. Approx. 28 ton paper	30 tons/day		
PRIVATE SOURCES:				
Theda Clark Hospital	Hospital Wastes	1 ton/day		
St. Elizabeth Hospital	Hospital Wastes	0.6 ton/day		
Lehrer Trucking	Building Demolition Wastes	4.2 tons/day		
INDUSTRY		MINIMUM	MAXIMUM	AVERAGE
Mid-Tech, Kimberly	Paper Mill Sludge - 18% Solids	90 tons/day	130 tons/day	110 tons/day
Wisconsin Tissue, Menasha	Paper Mill Sludge - 23% Solids	75 tons/day	100 tons/day	87.5 tons/day
George Whiting Paper Company	Paper Mill Sludge - 18% Solids	----	----	10 tons/day
American Can	Paper Mill Wastes	25 tons/day	40 tons/day	32 tons/day

TABLE I, Cont.

Kimberly Clark	Paper Mill Wastes	15 tons/day	25 tons/day	20 tons/day
Appleton Papers, Lox Division	Paper Mill Wastes Wood Bark	5 tons/day 25 c.y./day	10 tons/day 150 c.y./day	7.5 tons/day 90 c.y./day
Misc. Mills	Paper Mill Waste	8 tons/day	12 tons/day	10 tons/day

Total Average Sludge	=	207.5 tons/day
Total Sludge Volume	=	276 cu. yds. (Based on 1500 lbs. per cu. yd. sludge)
Total Refuse	=	107.0 tons/day
Total Refuse Volume	=	214 cu. yds. (Based on 1000 lbs. per cu. yd. of compacted refuse)
Total Bark Volume	=	55 cu. yds./day (Based on 40% compaction)
Total Volume	=	545 cu. yds./day
Total Volume Required	=	545 cubic yards + 30% Cover Materials
	=	710 cu. yds./day

TABLE II

CELL NO.	CLAY REMOVED Cu. Yds.	TOTAL CELL CAPACITY Cu. Yds.	REFUSE CAPACITY Cu. Yds.	20% DAILY COVER Cu. Yds.	FINAL COVER Cu. Yds.	TOPSOIL REQUIRED Cu. Yds.	EXCESS CLAY Cu. Yds.
3	52,640	61,600	42,100	10,520	6,740	2,240	35,380
4	63,300	74,730	51,680	12,920	7,600	2,530	42,780
5	63,300	74,730	51,680	12,920	7,600	2,530	42,780
6	63,300	76,000	52,696	13,174	7,600	2,530	42,526
7	62,220	63,200	43,944	10,986	6,200	2,070	45,034
8	78,500	73,460	50,676	12,654	7,600	2,530	58,246
9	76,000	74,730	51,680	12,920	7,600	2,530	55,480
TOTAL	459,260	498,450	344,456	86,094	50,940	16,960	322,226

TABLE III

Anticipated Life of Site

Cell No.	Refuse Capacity (cu. yds.)	Life of Cell Days	Life of Cell Years*
3	42,100	60	0.23
4	51,680	73	0.28
5	51,680	73	0.28
6	52,696	74	0.28
7	43,944	62	0.24
8	50,676	71	0.27
9	51,680	73	0.28
Total	344,456	486**	1.88

* Based on 260 operating days per year

** Will vary with the compressability of the refuse

DRAWINGS

The following engineering drawings are included herewith to complete the engineering plans.

SHEET NO.	DESCRIPTION	DRAWING NO.
1	Location Map & Index	DE-1073
2	Survey Map	DE-1074
3	Land Use & Zoning	DE-1075
4	Soils & Topography	DE-1076
5	Cell Development Plan	DE-1077
6	Sequencing Plan at 50% Complete	DE-1078
7	Proposed Final Grades	DE-1079
8	Access Road & Details	DE-1080
9	Development Details	DE-1081
10	Cross - Sections	DE-1082
11	Cross - Sections	DE-1083
12	Cross - Sections	DE-1084

Lehrer
Tn Buchanan

November 22, 1976

4410

Mr. Theodore J. Harris
Harris and Associates, Inc.
2718 N. Meade Street
Appleton, Wisconsin 54911

Dear Mr. Harris:

This letter is to acknowledge, in response to Order Number 2A-75-1045A, receipt of the preliminary engineering plan for the Lehrer landfill, license #0073, located in the SE 1/4, SE 1/4, Section 22, T21N, R18E, Town of Buchanan, Outagamie County by the Bureau of Air and Solid Waste Management on November 16, 1976.

You will be informed in the near future of the status of review.

If you have any questions, please contact Mr. Robert T. Glebs at 608-266-7055.

Sincerely,
Bureau of Air and Solid Waste Management

JJR RTG

John J. Reinhardt, Chief
Solid Waste Management Section
RTG:mlu

cc: Mr. James Lehrer
Lake Michigan District

RECEIVED DNR
NOV 26 1976
Lake Mich. Dist.

01048